

(12) **United States Patent**
Miller et al.

(10) **Patent No.:** **US 10,648,765 B2**

(45) **Date of Patent:** **May 12, 2020**

(54) **HIGH CAPACITY MAGAZINE FOR SPHERICAL PROJECTILES**

(71) Applicant: **Hasbro, Inc.**, Pawtucket, RI (US)

(72) Inventors: **Christopher Miller**, Tarrytown, NY (US); **Robert James Victor**, New York, NY (US); **William J Bryant**, Dayton, OH (US); **David Michael Nugent**, Newport, RI (US)

(73) Assignee: **HASBRO, INC.**, Pawtucket, RI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/218,224**

(22) Filed: **Dec. 12, 2018**

(65) **Prior Publication Data**

US 2019/0204041 A1 Jul. 4, 2019

Related U.S. Application Data

(60) Provisional application No. 62/611,802, filed on Dec. 29, 2017.

(51) **Int. Cl.**
F41A 9/61 (2006.01)
F41B 7/00 (2006.01)
F41B 7/08 (2006.01)
F41A 9/75 (2006.01)

(52) **U.S. Cl.**
CPC **F41B 7/006** (2013.01); **F41A 9/75** (2013.01); **F41B 7/08** (2013.01)

(58) **Field of Classification Search**
CPC F41B 7/006; F41B 7/08; F41A 9/75
USPC 89/33.02, 33.17; 124/45, 48, 51.1, 52
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

409,017 A	8/1889	Comstock	
522,464 A	7/1894	Fox	
532,090 A	1/1895	Park	
961,511 A	6/1910	Marble	
3,465,744 A	9/1969	Nielsen	
4,384,508 A	5/1983	Sullivan et al.	
4,558,626 A	12/1985	Bartolles	
4,774,929 A	10/1988	Milliman	
5,529,050 A	6/1996	D'Andrade	
6,109,252 A	8/2000	Stevens	
6,598,329 B1	7/2003	Alexander	
7,222,617 B2 *	5/2007	Andresen F41A 9/02 124/48
7,287,526 B1	10/2007	Bligh et al.	
7,357,130 B2 *	4/2008	Broersma F41A 9/02 124/51.1
7,418,797 B1	9/2008	Croze	
7,437,847 B1	10/2008	Mabry	
7,552,557 B1	6/2009	Mabry	

(Continued)

Primary Examiner — Nini F Legesse

(74) Attorney, Agent, or Firm — Perry Hoffman

(57) **ABSTRACT**

A large capacity magazine apparatus for spherical projectiles, such as toy foam balls that may be used in conjunction with a launcher. The magazine includes drum and clip housings and a rotatable sprocket with longitudinal flutes that together form a smooth pathway for the foam balls to travel in the magazine and to alleviate jams. The smooth pathway includes a helical path, a transition path and a linear path within the housings. A constant force spring provides a rotational force for the sprocket and a plurality of articulated rigid balls function to push the foam balls out of the magazine and into a firing chamber of the launcher.

25 Claims, 22 Drawing Sheets